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William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

Re: ET Docket No. 94-124, RM-8308
Ex Parte Presentation

Dear Mr. Caton:

On March 16, 1995, representatives of Hughes Communications Galaxy, Inc. ("Hughes") and Teledesic Corporation ("Teledesic") met with Commission representatives to discuss matters related to the Commission's pending proceeding in ET-Docket No. 94-124. The Hughes representatives included Dr. Louis Ippolito, Edward E. Reinhart and the undersigned. Teledesic was represented by Tom W. Davidson and Farzad Ghazvinian. In addition, the Hughes and Teledesic representatives were accompanied by Dr. Teddy O'Connell of Scientific Generics.

The Commission's representatives included Thomas S. Tycz, Michael J. Marcus, Robert James, Fern J. Jarmulnek, Donna Bethea, Jennifer M. Gilsenan, Donald Gipps and Gregory Rosston.

Enclosed is a proposed meeting agenda that was circulated at the meeting. We discussed only the items under headings I, II, III and V. The enclosed materials entitled "40 GHz Microwave Equipment Status and Availability in Europe" formed the basis for most of the discussions at the meeting. In addition, we discussed the equipment described in the enclosed drawings. The discussions also included some of the information with respect to 40 GHz equipment contained at pages 16-24 of Exhibit A to the Reply Comments of Hughes filed in this

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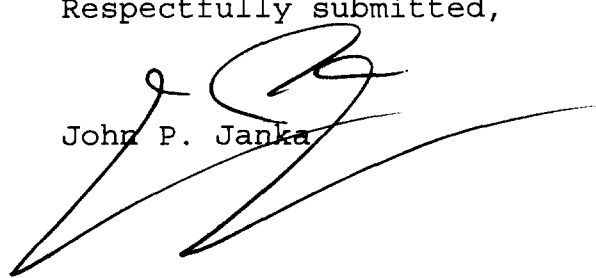
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William F. Caton
March 16, 1995
Page 2

proceeding on March 1, 1995. In addition, we had a brief discussion about the frequency bands available under the international table of frequency allocations for satellite uplinks and the effect of rain losses on satellite uplinks.

An original and two copies of this letter are enclosed (complete with enclosures). Copies of this letter and the enclosed materials are being provided simultaneously to the Commission representatives identified above.

Respectfully submitted,


John P. Janka

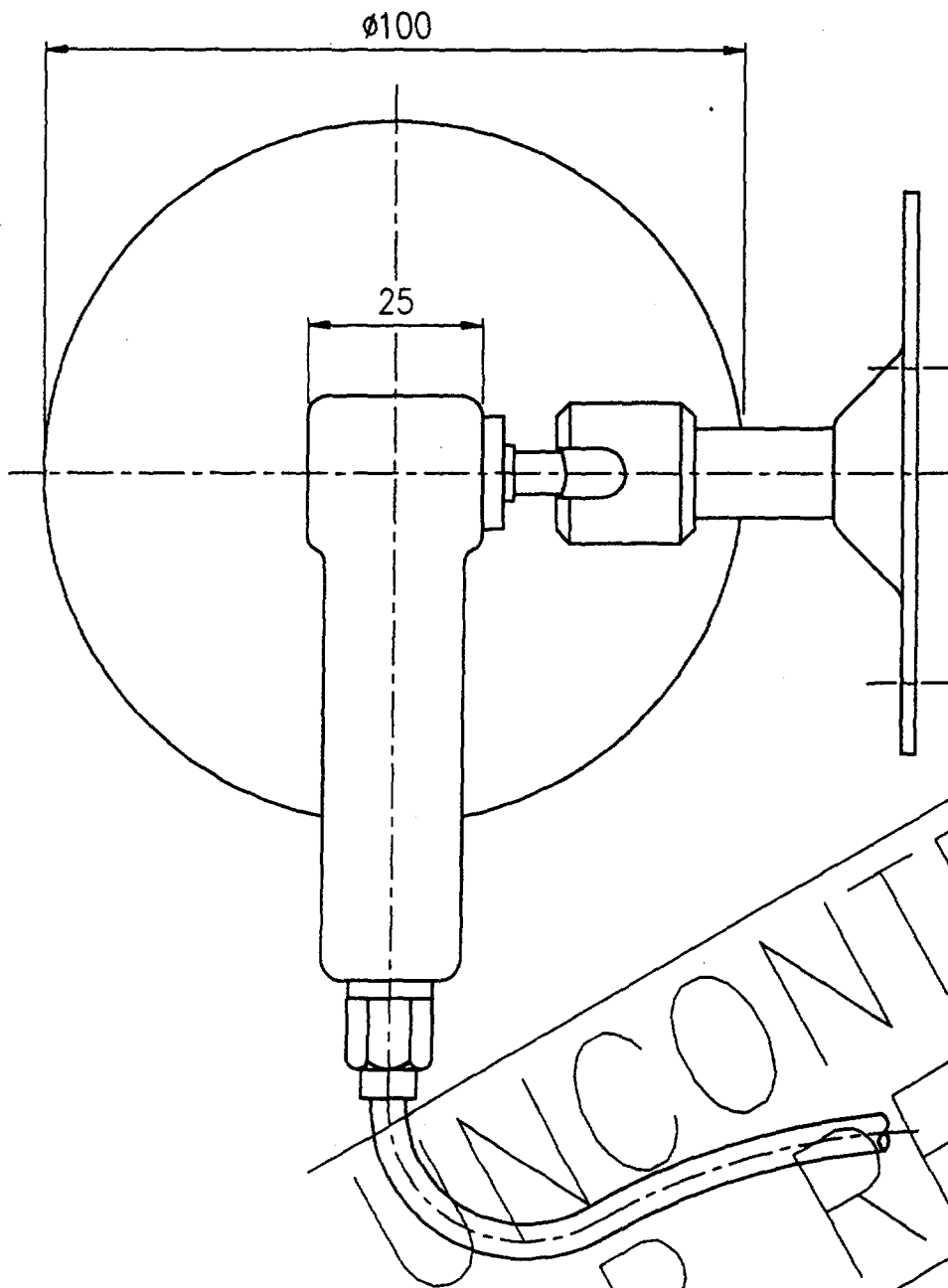
Enclosures (4)

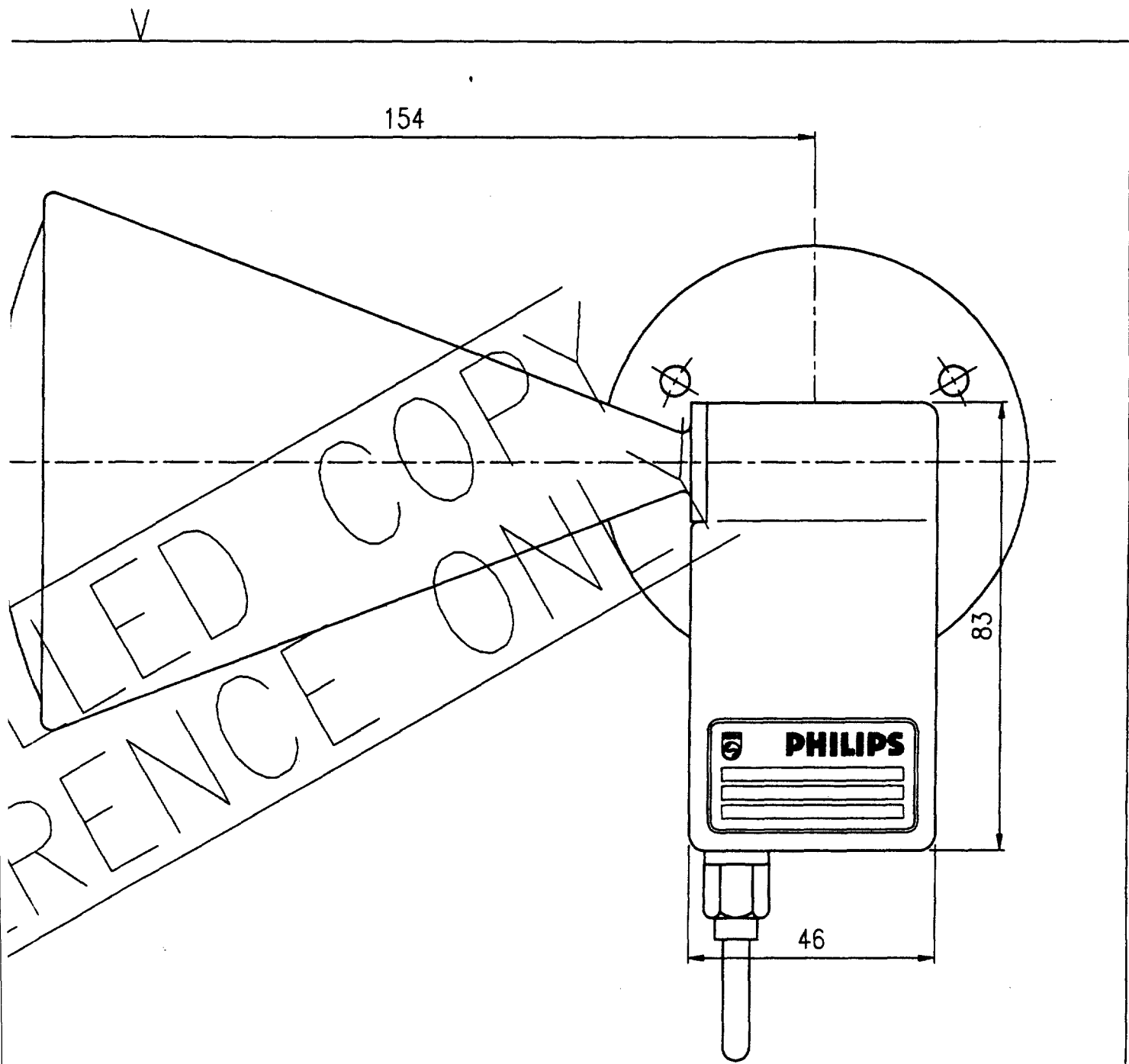
PHILIPS



ISSUED TO

MVDS
TYPES





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DEPT. DEV-M		SHEET No. 110 1 OF 1		TITLE		Bramhall Moor Lane, Hazel Grove, Stockport, Cheshire, SK7 5BJ, UK. Tel: +44 161 483 0011 Fax: +44 161 483 0014			
Property of		Philips Microwave				A3			

LMDS In 41 GHz Band Is Technically and
Economically Feasible
and 41 GHz Equipment is Available

I. Introduction & Overview

II. MVDS in the United Kingdom

1. Brief history
2. Current status of Eurobell
3. Future plans (More franchises and digital spec)
4. Availability of 41 GHz equipment

III. Availability and Cost of 41 GHz equipment in United States

IV. Technical Feasibility of LMDS at 41 GHz

1. Effect on cell size and availability
2. Attenuation due to rain
3. LMDS spectrum requirements at 41 GHz

V. Satellites at 41 GHz

40 GHz Microwave Equipment, Status and Availability in Europe

Scientific Generics

Dr. Teddy O'Connell

MVDS - History

- **Aug 1989, the UK RA selected 40.5 GHz to 42.5 GHz band for MVDS**
- **In 1990, CEPT recommended that the band 40.5 - 42.5 GHz be adopted into domestic allocation for MVDS**
- **MVDS working group established to create necessary technical, planning and licensing rules for analog MVDS**
- **MPT 1550 specification created in Sept 1993. This has been drafted to provide the maximum commonality between MVDS and ASTRA satellite DTH receivers.**
- **In Europe 11 countries have designated the 40 GHz band for MVDS and 9 plan to do so**
- **In 1994 working group re-convened to develop specification for digital compressed TV with voice and data return links**

UK MVDS - Current Status

- **EUROBELL - local delivery franchise awarded for 100K homes in West Kent, UK**
 - **approx 35 cells, average 1500 homes per cell**
 - **Local Delivery - full interactive service to 16,200 homes**
 - **Regional Delivery - Microwave relay of standard satellite channels**
 - **Service roll-out 1996-1998, initially using Philips equipment**
- **At present there are also a number of other MVDS bids in preparation. These will be submitted before end of March**
- **MVDS radio equipment available in production from Philips Microwave and GEC Marconi by August 1995**

UK MVDS - Current Status

- **Currently looking towards Digital MVDS**
 - **Greater spectral utilisation**
 - **better/more stable picture quality**
 - **greater interactive capability e.g. Video on Demand**
 - **possibility of more efficient cell re-use**
- **RA Digital MVDS working group established in 1994**

UK MVDS - Current Status

- **PROPOSED DIGITAL MVDS DESIGN**
- **To achieve compatability with DTH systems**
 - **MPEG-2 compression techniques**
 - **QPSK modulation employed**
 - **29.5 MHz channel spacing**
- **Back-channel method: i.e. provide return channel at approx 64 - 640 KB/s**

UK MVDS - Current Status

- **PROPOSED DIGITAL MVDS DESIGN**

- **MPEG-2 compression techniques => 2MB/s - 6MB/s per programming channel**

Thus can contain approx 24MB/s in 1 channel

=> 4 to 12 programming channels in 29.5 MHz

**Total no. of channels is: 128 (4x32) to 384 (12x32)
in 1 GHz**

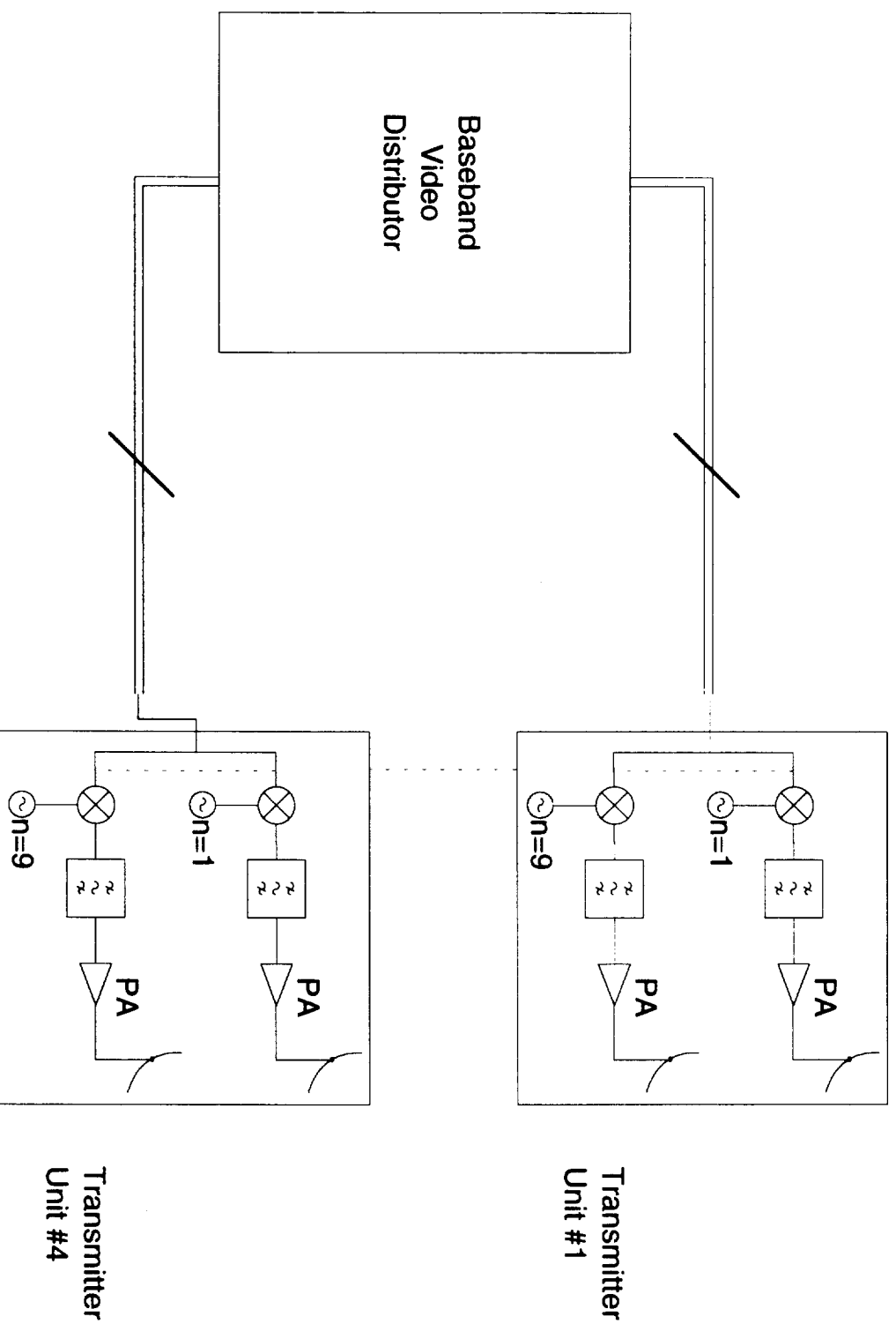
Current MVDS Equipment

- **Philips Microwave - significant investment in 40 GHz radio equipment**
 - **approx 10 man years in developing complete system**
- **Demo equipment available now**
- **Production quantities by August 1995**
- **Equipment is based on achieving as much commonality as possible with existing DTH front end receivers and indoor IF demodulator units**

Current MVDS Equipment

- **PHILIPS Transmitter Unit specification**
 - **4 transmitter units, each with 8+1 (redundant) transceiver**
 - **Redundant transmitter on Hot Standby (200 MHz bandwidth)**
 - **Seperate transmitter for each channel**
 - **PA technology MMIC GaAs pHEMT - Power is 23 dBm per channel**
 - **cost approx £800 each in volume**
 - **By 1996 transmitter powers of 1 Watt per channel could be available**
 - **Horn Antenna for each channel => 15 dB gain**
 - **Cost estimate: £33,000-£57,000 for transmitter station**

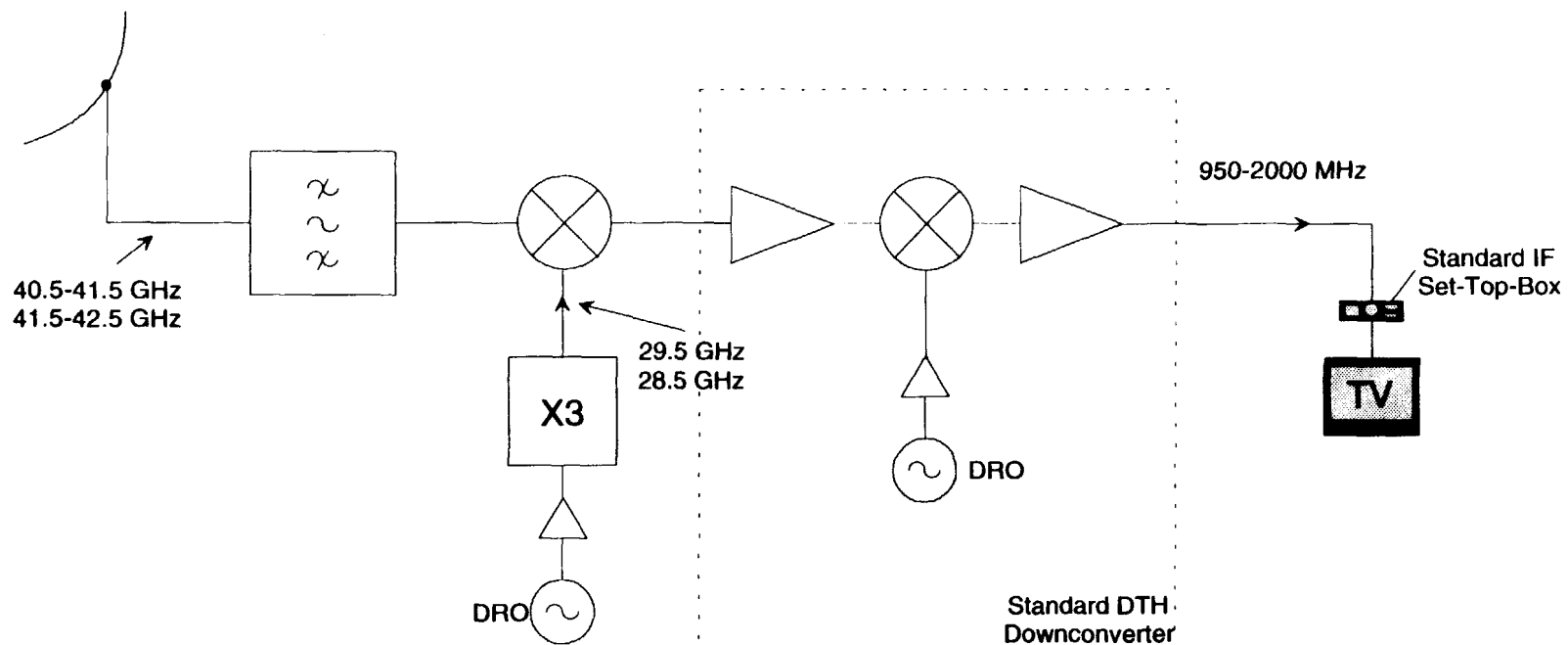
Philips Transmitter Unit



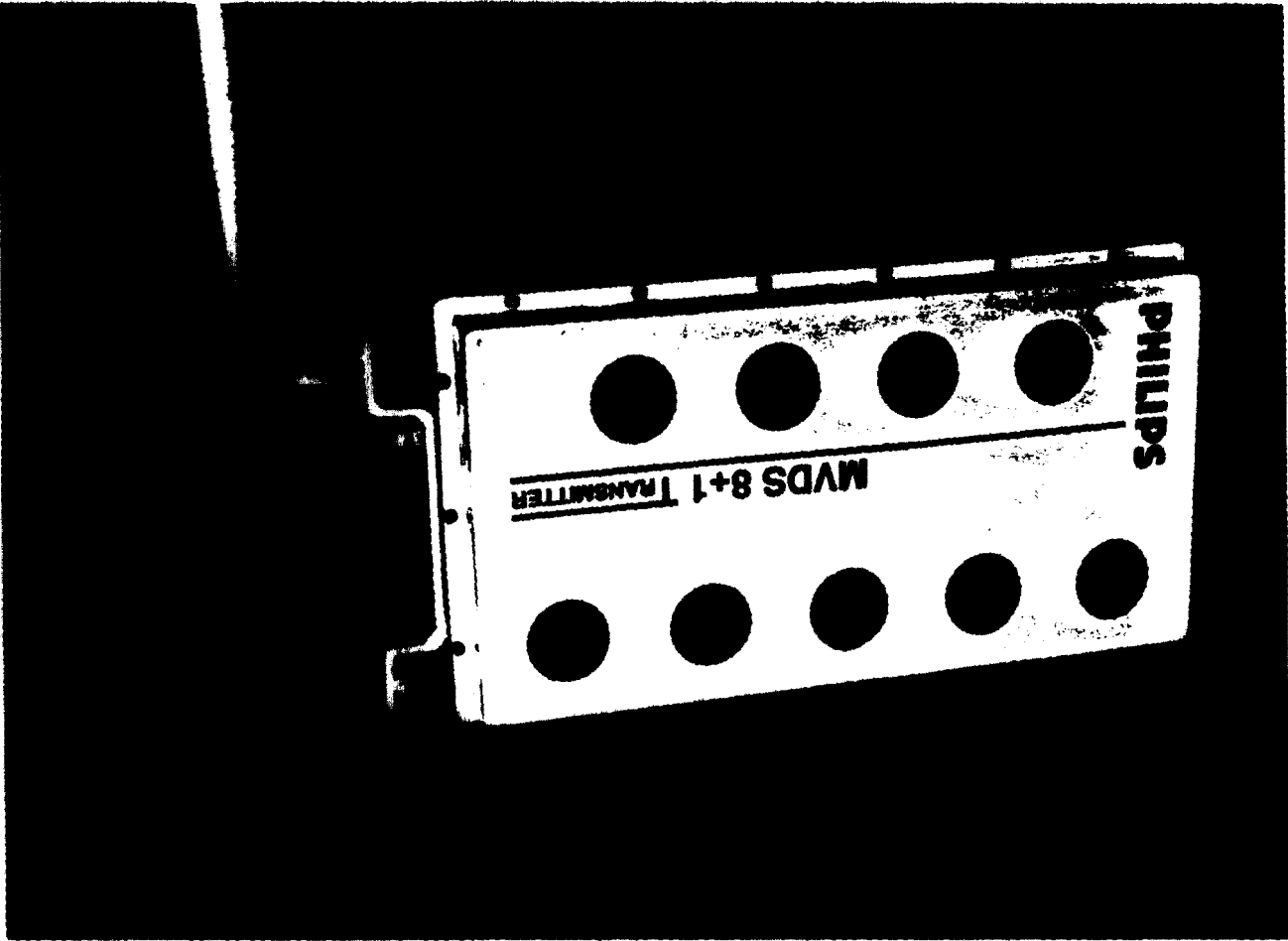
Current MVDS Equipment

- **Receiver Unit**
 - **Based on commercially available satellite DTH Downconverter**
 - **Extra downconversion stage from 40 GHz to 12 GHz (1st IF)**
 - **2nd IF: 950 - 2000 MHz**
 - **2nd IF fed into standard satellite DTH receiver set-top box**
- **Rx Antenna**
 - **Horn Antenna**
 - **Small size - low cost**
 - **High Gain (32 dBi) so eliminates need for LNA in Receiver**
- **estimated cost for 40 GHz MVDS receiver (excluding indoor set-top box) is £65 - £130**

Philips Receiver Unit



GENERIC



Current MVDS Equipment

- **Other Hardware Providers**
 - **GEC Marconi, UK**
 - **Working on 40 GHz MVDS demo, available June 1995**
 - **On target for production late 1995**
 - **40 GHz components available from a number of suppliers:**
 - **Farran Technology, Ireland**
 - **Thompson CSF**
 - **RACAL**

SUMMARY

- **Philips are developing 40 GHz equipment which will be available in production by August 1995**
- **Eurobell intend to use Philips equipment in their local delivery franchise which will begin in 1996**
- **Digital MVDS is currently being developed which can provide approx 300 channels in 1 GHz**
 - **Philips plan to have this 40 GHz digital equipment in production by end of 1996**

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This page has been substituted for one of the following:

✓ An oversize page or document (such as a map) which was too large to be scanned into the RIPS system.

o Microfilm, microform, certain photographs or videotape.

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